BREVIORA

Museum of Comparative Zoology

US ISSN 0006-9698

CAMBRIDGE, MASS. 10 APRIL 2002 NUMBER 510

MC
IBRA
AUG - 7
HARV
UNIVER

RECENTLY EXTINCT MAMMALS IN THE MUSEUM OF COMPARATIVE ZOOLOGY

KRISTOFER M. HELGEN[1] AND TERRI L. MCFADDEN[1]

Mammalian extinctions in the modern era are a cause of profound environmental and scientific concern. Efforts to document the magnitude of mammalian extinctions within the last 500 years have increased in recent years (e.g., Cole *et al.*, 1994; MacPhee and Marx, 1997; Williams and Nowak, 1993); the most rigorous of these can be found in MacPhee and Flemming (1999). These studies have resolved much confusion regarding the enigmatic taxonomic status of many supposedly extinct mammals, and produced useful discussions concerning the correct dating of extinction for others.

The present report provides a list (Table 1) of specimens of recently extinct mammals housed in the Museum of Comparative Zoology (MCZ). Reporting museum specimens of recently extinct taxa (such as Feiler, 1999) is especially appropriate because comparative material for these taxa is by definition limited, and in many cases, extremely rare in collections (Flannery and Schouten, 2001).

Compilations of modern-era extinctions usually define the modern era to comprise the last 500 years. Many mammal species, especially species restricted to islands, are thought to have become extinct early within this period, and are known only by

[1] Mammal Department, Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, Massachusetts 02138, USA.

SHOUT
SHARE
IT

BREVIORA

Museum of Comparative Zoology

US ISSN 0006-9698

CAMBRIDGE, MASS. 10 APRIL 2002 NUMBER 510

AUG
HAR
UNIV

RECENTLY EXTINCT MAMMALS IN THE MUSEUM OF COMPARATIVE ZOOLOGY

KRISTOFER M. HELGEN[1] AND TERRI L. MCFADDEN[1]

Mammalian extinctions in the modern era are a cause of profound environmental and scientific concern. Efforts to document the magnitude of mammalian extinctions within the last 500 years have increased in recent years (e.g., Cole *et al.*, 1994; MacPhee and Marx, 1997; Williams and Nowak, 1993); the most rigorous of these can be found in MacPhee and Flemming (1999). These studies have resolved much confusion regarding the enigmatic taxonomic status of many supposedly extinct mammals, and produced useful discussions concerning the correct dating of extinction for others.

The present report provides a list (Table 1) of specimens of recently extinct mammals housed in the Museum of Comparative Zoology (MCZ). Reporting museum specimens of recently extinct taxa (such as Feiler, 1999) is especially appropriate because comparative material for these taxa is by definition limited, and in many cases, extremely rare in collections (Flannery and Schouten, 2001).

Compilations of modern-era extinctions usually define the modern era to comprise the last 500 years. Many mammal species, especially species restricted to islands, are thought to have become extinct early within this period, and are known only by

[1] Mammal Department, Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, Massachusetts 02138, USA.

TABLE 1. LIST OF RECENTLY EXTINCT MAMMALS (IN THE LAST 250 YEARS) IN THE MUSEUM OF COMPARATIVE ZOOLOGY, HARVARD UNIVERSITY. ALL SPECIMENS ARE STORED IN THE MAMMAL DEPARTMENT.[a]

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
Dasyuromorphia					
Thylacinidae					
Thylacinus cynocephalus					
Tasmania	ND	MCZ 6014	ND	Mounted skeleton	Received 1878
	ND	MCZ 6349	ND	Mounted skin	Received 1882
	Maybe 1938	MCZ 36797	ND	Skin, skull, and posteranial skeleton	No head skin
Peramelia					
Peramelidae					
Macrotis leucura					
Southwest Queensland; Lower Diamantina area	Before 1935	MCZ 33873	F	Skin	MCZ 33873 and 33874 may be the same individual
	Before 1935	MCZ 33874	F	Skull	
Diprotodontia					
Macropodidae					
Caloprymnus campestris					
South Australia; Diamantina River, Cooncherie	1932	MCZ 37651	F	Skin and skull	Juvenile, specimen described by Tate (1948:265)

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
Lagorchestes leporides					
Australia; Victoria	ND	MCZ 1880	ND	Skin and skull	
Sirenia					
Dugongidae					
Hydrodamalis gigas					
Probably Bering Island	ND	MCZ 59412	ND	Mounted skeleton—composite	From USNM[c]
Rodentia					
Muridae					
Nesoryzomys indefessus indefessus					
Galapagos Islands; Santa Cruz, Academy Bay	12 Jan 1929	MCZ 27036	F	Skin and skull	
Galapagos Islands; Santa Cruz, Conway Bay	16 Jan 1929	MCZ 27037	F	Skin and skull	
Capromyidae					
Geocapromys thoracatus					
Honduras; Gulf of Mexico, Little Swan Island	Mar 1912	MCZ 8435	ND	Cranium only	All of these specimens were examined by Morgan (1985)
	3 Mar 1912	MCZ 12816	M	Skin and skeleton	
	11 Mar 1912	MCZ 12817	M	Skin and skeleton	
	4 Mar 1912	MCZ 12818	M	Skin and skeleton	
	3 Mar 1912	MCZ 12819	F	Skin and skeleton	

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
	Mar 1912	MCZ 12821	M	Skin and skeleton	
	1 Apr 1912	MCZ 14410	M	Skin	
	1912	MCZ 14535	ND	Skeleton	
	1912	MCZ 27882	ND	Skeleton	
	ND	MCZ 34846	ND	Skeleton	
Carnivora					
Canidae					
Canis lupus beothucus					
Newfoundland	Received 1865	MCZ 348	M	Skull	Paratype; all of these specimens are discussed by Allen and Barbour (1937)
	Received 1865	MCZ 350	F	Full skeleton	Paratype
	Received 1865	MCZ 351	ND	Full skeleton	Holotype; probably male
Newfoundland; north of Lake Grand	About 1896	MCZ 28726	ND	Skin	Paratype
Canis lupus nubilus					
Kansas, northwestern part	Probably 1872	MCZ 127	ND	Mounted skeleton	
	Jan 1872	MCZ 65	ND	Skull	

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
	Jan 1872	MCZ 66	ND	Skull	
	Jan 1872	MCZ 67	ND	Skull	
Kansas	Probably 1872	MCZ 267	ND	Skeleton	
	Probably 1872	MCZ 268	ND	Skeleton	
North Dakota; Dickinson	19th century	B4284	ND	Skull	
Montana; Milk River	19th century	MCZ 6965	ND	Skull	Received 1878
Nebraska; Ft. Kearny	ND	MCZ 11183	F	Skull	
North Dakota; Ft. Lincoln	1938	MCZ 37809	ND	Skull, foot, bone fragment	Archeological material
North Dakota; Sheyenne R.	1938	MCZ 37812	ND	Mandible fragment	Archeological material
Ursidae					
Ursus arctos californicus					
California; probably near San Francisco	Probably 1862	MCZ 41998	ND	Skull	Specimen described by Lawrence (1944:98)
Phocidae					
Monachus tropicalis					
ND	ND	MCZ 6520	M	Mounted skin	Received 1887
Gulf of Campeche	ND	MCZ 6579	ND	Mounted skin	Received in 19th century

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
	ND	MCZ 6274	ND	Mounted skeleton	Received in 19th century
ND	ND	MCZ 8605	ND	Skin and skeleton	
Mustelidae					
Mustela vison macrodon					
Maine; Penobscot Bay, Great Spruce Head Island	Jul 1914	MCZ 11378	M	Maxillae	The Maine specimens are all from Native American shell heaps
	Jul 1914	MCZ 11379	ND	Frontals	
	Jul 1914	MCZ 11380	F	Maxillae	
	Jul 1914	MCZ 11381	M	14 mandible fragments	
	Jul 1914	MCZ 11382	F	3 mandible fragments	
	Jul 1914	MCZ 11383	ND	6 canines	
	Jul 1914	MCZ 11384	M	5 ends of humeri	
	Jul 1914	MCZ 11385	F	Humerus	
	Jul 1914	MCZ 11386	ND	Ilium	
Maine; Indiantown Island near Boothbay Harbor	1921	MCZ 19768	ND	Lower ramus	
	1921	MCZ 19769	ND	Lower ramus	
	1921	MCZ 19770	ND	Femur	
	1921	MCZ 19771	ND	Femur fragment	
Maine; Port Clyde	1927	MCZ 23827–23863	ND	Rami fragments	
	1927	MCZ 23864–23871	ND	Rostrum	
	1927	MCZ 23872	ND	Cranium fragment	

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
	1927	MCZ 23873	ND	Upper molar	
	1927	MCZ 23874	ND	Atlas	
	1927	MCZ 23875	ND	Femur	
	1927	MCZ 23876	ND	Radius	
	1927	MCZ 23877	ND	Pelvis	
	1927	MCZ 23878	ND	Pelvis	
	1927	MCZ 23879–23882	ND	Humeri	
Maine; Frenchman's Bay	1937	MCZ 35552	ND	Teeth and rostrum	
Maine; Harbor Island off Brooklin	Probably 1932	MCZ 36614	ND	Mandibles	
Maine; Great Spruce head Island	1915	MCZ 36970	ND	Cranium fragments	
	1915	MCZ 36971	ND	Mandibles, rostrum, and atlas	
Massachusetts; Plymouth County, north shore of Assawampsett Lake	1958	MCZ 51076	ND	Left radius	Wapanucket site 6
	1958	MCZ 51077	ND	Right femur	Wapanucket site 6
Felidae					
Panthera tigris sondaica					
Java; near Java Head Jungle	1903	MCZ 42144	ND	Skin and skull	

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
Panthera tigris virgata					
Persia (=Iran); near Bartarush, Caspian Sea	1904	MCZ 42145	ND	Skin	
Panthera leo leo					
Morocco; cave Mugharet el Aliya	1939	MCZ 39664	F?	Cranium, 1 metacarpal, 1 phalanx	
Perissodactyla					
Equidae					
Equus hemionus hemippus					
Syria	19th century	MCZ 6345	ND	Skeleton	Received 1880
Rhinocerotidae					
Diceros bicornis brucii					
Abyssinia (=Ethiopia)	19th century	MCZ 7079	ND	Skull	Juvenile
Artiodactyla					
Suidae					
Phacochoerus aethiopicus aethiopicus					
South Africa	19th century	MCZ 5009	ND	Skeleton	
South Africa; Cape of Good Hope	19th century	MCZ 41997	ND	Skull	

TABLE 1. CONTINUED

Locality	Date Collected	Catalogue Number	Sex	Nature of Specimen	Remarks
Bovidae					
Ovis canadensis auduboni					
"Upper Missouri River"	1861	MCZ 10749	F	Bisected cranium	Collected by F. V. Hayden, probably a paratype

[a] ND, no data available; MCZ, Museum of Comparative Zoology; B, Bangs Collection; F, female; USNM, United States National Museum; M, male.

subfossil material. The Vertebrate Paleontology Department of the MCZ houses extensive collections of fragmentary subfossil material of a number of Caribbean endemic mammals, including *Nesophontes micrus, Nesophontes hypomicrus, Nesophontes zamicrus, Solenodon marcanoi, Brotomys voratus, Boromys offella, Boromys torrei, Isolobodon portoricensis, Geocapromys columbianus, Geocapromys ingrahami abaconis,* and *Geocapromys ingrahami irrectus.* This material, reported by Allen (1911, 1917a, b, 1918, 1937), Koopman and Ruibal (1955), Lawrence (1934), and Patterson (1962), is not discussed here. Instead, only mammal taxa known to have become extinct within the last 250 years are discussed.

The MCZ contains specimens of seven mammal species of valid systematic status that are considered to have become extinct after 1750. These are the Lesser bilby (*Macrotis leucura*), Desert rat-kangaroo (*Caloprymnus campestris*), Eastern hare wallaby (*Lagorchestes leporides*), Thylacine or Tasmanian wolf (*Thylacinus cynocephalus*), Steller's sea cow (*Hydrodamalis gigas*), Caribbean monk seal (*Monachus tropicalis*), and Little Swan Island hutia (*Geocapromys thoracatus*). Species often included in recent extinction lists but considered to be disqualified taxa by MacPhee and Flemming (1999:352–354)—disqualified either because they have been shown not to have become extinct within this period or because their systematic status is considered invalid—are excluded from consideration in this list. Thus, although many of these disqualified taxa, such as *Potorous gilbertii, Procyon gloveralleni, Tolypeutes tricinctus,* and *Cervus schomburgki,* are represented in the collections of the MCZ, we do not include them here.

Additionally, a number of subspecific mammalian taxa that have recently become extinct are represented by specimens in the MCZ. Although mammalian extinction at the subspecific level has received little attention, several mammal subspecies, widely recognized as taxonomically valid by recent authors, and undoubtedly extinct, are included in this list. These are the Newfoundland wolf (*Canis lupus beothucus*) and Great Plains wolf (*C. l. nubilus*; see Mech, 1974:1); California grizzly bear, (*Ursus arctos californicus*; see Hall, 1984:3); Sea mink (*Mustela vison*

macrodon; see Manville, 1966:10); Sundaic tiger (*Panthera tigris sondaica*) and Caspian tiger (*P. t. virgata*; see Kitchener, 1999); Barbary lion (*Panthera leo leo*; see Nowak, 1999:834); Syrian ass (*Equus hemionus hemippus*; see Groves, 1974:162); Northern black rhinoceros (*Diceros bicornis brucii*; see Groves, 1967:274; Kingdon, 1997:319); Cape warthog (*Phacochoerus aethiopicus aethiopicus*; see Kingdon, 1997:334); Badlands bighorn sheep (*Ovis canadensis auduboni*; see Nowak, 1999:1237); and Santa Cruz rice rat, (*Nesoryzomys indefessus indefessus*; see Musser and Carleton, 1993:714).

Although we hope that this account will not become immediately outdated as other mammals join the ranks of these extinct forms, the current conversion rate of natural areas makes future losses inevitable. Continuing systematic study of species diversity in mammals and all other taxonomic groups serves to highlight the tragedy of modern era extinctions via human impact, and should continue to remind all that the biological specimens preserved in museums throughout the world should ideally serve as a testament to, and not as a memorial for, the remarkable biodiversity of the natural world.

ACKNOWLEDGMENTS

We thank M. Rutzmoser, A. Biewener, C. Schaff, D. Wilson, and A. Gardner for their assistance.

LITERATURE CITED

Allen, G. M. 1911. Mammals of the West Indies. Bulletin of the Museum of Comparative Zoology, **54:** 175–263.

———. 1917a. New fossil mammals from Cuba. Bulletin of the Museum of Comparative Zoology, **61:** 3–12.

———. 1917b. An extinct Cuban *Capromys*. Proceedings of the New England Zoological Club, **6:** 53–56.

———. 1918. Fossil mammals from Cuba. Bulletin of the Museum of Comparative Zoology, **62:** 131–148.

———. 1937. *Geocapromys* remains from Exuma Island. Journal of Mammalogy, **18:** 369–370.

Allen, G. M., and T. Barbour. 1937. The Newfoundland wolf. Journal of Mammalogy, **18:** 229–234.

Cole, F. R., D. M. Reeder, and D. E. Wilson. 1994. A synopsis of distribution

patterns and the conservation of mammal species. Journal of Mammalogy, **75:** 266–276.

Feiler, A. 1999. Ausgestorbene Säugetiere, Typusexamplare und bemerkenswerte Lokalserien von Säugetieren aus der Sammlung des Staatlichen Museums für Tierkunde Dresden (Mammalia). Zoologische Abhandlungen, Staatliches Museum für Tierkunde Dresden, **50:** 401–414.

Flannery, T. F., and P. Schouten. 2001. A Gap in Nature. Melbourne, Australia: Text Publishing, 184 pp.

Groves, C. P. 1967. Geographic variation in the black rhinoceros *Diceros bicornis* (L., 1758). Zeitschrift für Säugetierkunde, **32:** 267–276.

———. 1974. Horses, Asses, and Zebras in the Wild. Newton Abbot, United Kingdom, David and Charles. 192 pp.

Hall, E. R. 1984. Geographic variation among brown and grizzly bears (*Ursus arctos*) in North America. Special Publications, Museum of Natural History, University of Kansas, **13:** 1–16.

Kingdon, J. 1997. The Kingdon Field Guide to African Mammals. San Diego, Academic Press. 464 pp.

Kitchener, A. C. 1999. Tiger distribution, phenotypic variation, and conservation issues, pp. 19–39. *In* J. Seidensticker, S. Christie, and P. Jackson (eds.), Riding the Tiger: Tiger Conservation in Human-Dominated Landscapes. Cambridge, Cambridge University Press. 383 pp.

Koopman, K. F., and R. Ruibal. 1955. Cave-fossil vertebrates from Camaguey, Cuba. Breviora, **46:** 1–8.

Lawrence, B. 1934. New *Geocapromys* from the Bahamas. Occasional Papers of the Boston Society of Natural History, **8:** 189–196.

———. 1944. Skull of a California grizzly. California Fish and Game, **30:** 98.

MacPhee, R. D. E., and C. Flemming. 1999. Requiem aeternam: The last five hundred years of mammalian species extinctions, pp. 333–371. *In* R. D. E. MacPhee (ed.), Extinctions in Near Time. New York, Kluwer Academic/Plenum Publishers. 394 pp.

MacPhee, R. D. E., and P. A. Marx. 1997. The 40,000-year plague: Humans, hyperdisease, and first-contact extinctions, pp. 169–217. *In* S. M. Goodman and B. D. Patterson (eds.), Natural Change and Human Impact in Madagascar. Washington, D.C., Smithsonian Institution Press. 432 pp.

Manville, R. H. 1966. The extinct sea mink, with taxonomic notes. Proceedings of the United States National Museum, **122**(3584): 1–12.

Mech, L. D. 1974. *Canis lupus.* Mammalian Species, **37:** 1–6.

Morgan, G. S. 1985. Taxonomic status and relationships of the Swan Island hutia, *Geocapromys thoracatus* (Mammalia: Rodentia: Capromyidae), and the zoogeography of the Swan Islands vertebrate fauna. Proceedings of the Biological Society of Washington, **98:** 29–46.

Musser, G. G., and M. D. Carleton. 1993. Family Muridae, pp. 501–755. *In* D. E. Wilson and D. M. Reeder (eds.), Mammal Species of the World. Second edition. Washington, D.C., Smithsonian Institution Press. 1206 pp.

Nowak, R. M. 1999. Walker's Mammals of the World. Sixth edition. Baltimore, Maryland, Johns Hopkins University Press, **1:** 1–836, **2:** 837–1936.

Patterson, B. D. 1962. An extinct solenodontid insectivore from Hispaniola. Breviora, **165:** 1–11.

Tate, G. H. H. 1948. Results of the Archbold Expeditions. No. 59. Studies on the anatomy and phylogeny of the Macropodidae (Marsupialia). Bulletin of the American Museum of Natural History, **91:** 233–352.

Williams, J. D., and R. M. Nowak. 1993. Vanishing species in our own backyard: Extinct fish and wildlife of the United States and Canada, pp. 115–148. *In* L. Kaufman and K. Mallory (eds.), The Last Extinction. Second edition. Boston, Massachusetts, MIT Press. 208 pp.